

Exercise - I (Conceptual Questions)

Build Up Your Understanding

AXIAL SKELETON

1. Cranium of human is made up of -
 (1) 8 bones (2) 12 bones
 (3) 16 bones (4) 14 bones
BLC001
2. The number of floating ribs and true ribs in human body -
 (1) 6 pairs, 8 pairs (2) 5 pairs, 4 pairs
 (3) 3 pairs, 2 pairs (4) 2 pairs, 7 pairs
BLC002
3. How many bones are present in human skull skeleton?
 (1) 22 (2) 29 (3) 12 (4) 42
BLC003
4. Number of cervical and thoracic vertebrae in human are
 (1) 7, 12 (2) 7, 10
 (3) 7, 11 (4) 7, 14
BLC004
5. Cranial bone related to ear is
 (1) Occipital (2) Frontal
 (3) Nasal (4) Temporal
BLC005
6. These facial bones are unpaired -
 (1) Lacrimal, Vomer
 (2) Vomer, Mandible
 (3) Nasal, Vomer
 (4) Palatine, Mandible
BLC006
7. In human beings the cranium is formed by
 (1) Ten bones of which two are paired
 (2) Eight bones of which two are paired
 (3) Fourteen bones of which six are paired
 (4) Twelve bones of which four are paired
BLC007

8. Which of the following is wrong statement about hyoid bone?
 (1) one in number
 (2) U-shaped
 (3) Not attached with any other bone of the body
 (4) Present at the top of the buccal cavity
BLC008
9. Largest, Heaviest mammalian vertebra is :-
 (1) Thoracic (2) Sacral
 (3) Lumbar (4) Cervical
BLC009
10. Which one of the following is the *correct description* of a certain part of a normal human skeleton ?
 (1) First vertebra is axis which articulates with the occipital condyles.
 (2) The 9th and 10th pairs of ribs are called the floating ribs.
 (3) Glenoid cavity is a depression to which the thigh bone articulates.
 (4) Parietal bone and the temporal bone of the skull are joined by fibrous joint.
BLC010
11. Which of the following vertebrae are fused?
 (1) Cervical, Thoracic (2) Cervical, Sacrum
 (3) Sacrum, Coccyx (4) Thoracic, coccyx
BLC011
12. The increase in vertebrae size from the neck to the lower back is due to :-
 (1) Supporting more weight in the lower back than in the neck.
 (2) Supporting less weight in the lower back than in the neck.
 (3) Evolution
 (4) Vertebrae don't increase in size.
BLC012

- 13.** Symphysis is made of :-
 (1) fibrocartilage (2) synovial fluid
 (3) elastic cartilage (4) hyaline cartilage

BLC013

APPENDICULAR SKELETON

- 14.** Part of pectoral girdle is:-
 (1) Ilium (2) Glenoid cavity
 (3) Acetabulum (4) Sternum

BLC014

- 15.** Scapula and clavicle form
 (1) Pelvic girdle (2) Pectoral girdle
 (3) Skull (4) Vertebral column

BLC015

- 16.** Pectoral girdle, pelvic girdle and limb bones constitute :
 (1) Visceral skeleton
 (2) Outer skeleton
 (3) Axial skeleton
 (4) Appendicular skeleton

BLC016

- 17.** Glenoid cavity is found in :
 (1) Pelvic girdle (2) Skull
 (3) Pectoral girdle (4) Sternum

BLC017

- 18.** Acromion process is part of :
 (1) Vertebral column (2) Pelvic girdle
 (3) Femur (4) Pectoral girdle

BLC018

- 19.** Pelvic girdle consists of :
 (1) Ilium
 (2) Ilium and ischium
 (3) Ilium, ischium and pubis
 (4) Ischium and pubis

BLC019

- 20.** Which of the following is a sesamoid bone?
 (1) Pelvic (2) Patella
 (3) Axis (4) Pectoral girdle

BLC020

- 21.** Number of bones in thumb of right forelimb of man are
 (1) 5 (2) 4 (3) 3 (4) 2

BLC021

- 22.** The clavicle articulates with _____ of scapula
 (1) Acromion process
 (2) Glenoid cavity
 (3) Acetabulum cavity
 (4) Ball and socket joint

BLC022

- 23.** Which one is a flat bone ?
 (1) Scapula (2) Carpal
 (3) Patella (4) Tarsals

BLC023

- 24.** Digital formula of foot of Human is :-
 (1) 03332 (2) 03333
 (3) 03322 (4) 23333

BLC024

- 25.** Presence of obturator foramen is feature of:-
 (1) Pectoral girdle
 (2) Vertebrae
 (3) Pelvic girdle
 (4) Occipital bone

BLC025

- 26.** The other name for knee cap is
 (1) Clavicle (2) Patella
 (3) Radius (4) Femur

BLC026

- 27.** An acromian process is characteristically found in the:-
 (1) Pectoral girdle of mammals
 (2) Sperm of mammals
 (3) Pelvic girdle of mammals
 (4) Skull of frog

BLC027

JOINTS AND DISORDERS

28. Study of joints known as :-

- (1) Osteology
- (2) Arthrology
- (3) Craniology
- (4) Kinesiology

BLC028

29. Saddle joint occurs between :-

- (1) Carpal and first metacarpal of thumb
- (2) Femur and pelvic girdle
- (3) All the vertebrae
- (4) Phalanges

BLC029

30. Joints between phalanges are :-

- (1) Ball and socket joints
- (2) Gliding joints
- (3) Hinge joints
- (4) Pivot joints

BLC030

31. It is an outcome of irregularities in metabolism of nitrogenous waste :-

- (1) Osteoporosis
- (2) Osteo-arthritis
- (3) Gouty arthritis
- (4) Rheumatoid arthritis

BLC031

32. Which of the following is correct for the given assertion (A) and reason (R)?

Assertion (A) : Knee joint is hinge joint type joint.

Reason (R) : Femur , patella and fibula are associated with knee joint.

- (1) Both (A) and (R) are true but (R) is the correct explanation of (A)
- (2) Both (A) and (R) are true but (R) is not the correct explanation of (A)
- (3) (A) is true statement but (R) is false.
- (4) Both (A) and (R) are false

BLC032

33. Synovial fluid is secreted by :-

- (1) Blood
- (2) Cartilage
- (3) Bone
- (4) Synovial membrane

BLC033

34. A joint between humerus and radius ulna is:

- (1) Ball & socket
- (2) Pivot
- (3) Gliding
- (4) Hinge

BLC034

35. The number of saddle joints in human beings is :-

- (1) 4
- (2) 8
- (3) 2
- (4) 10

BLC035

Exercise-I (Conceptual Questions)

ANSWER KEY

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Answer	1	4	2	1	4	2	2	4	3	4	3	1	1	2	2
Question	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Answer	4	3	4	3	2	4	1	1	4	3	2	1	2	1	3
Question	31	32	33	34	35										
Answer	3	3	4	4	3										

Exercise - II (Previous Year Questions)

AIPMT/NEET

AIPMT 2014

1. Select the correct matching of the type of the joint with the example in human skeletal system :

	Type of Joint	Example
(1)	Cartilaginous joint	Between frontal and parietal
(2)	Pivot joint	Between third and fourth cervical vertebrae
(3)	Hinge joint	Between humerus and pectoral girdle
(4)	Gliding joint	Between carpals

BLC036

AIPMT 2015

2. Glenoid cavity articulates :-
 (1) Scapula with acromion
 (2) Clavicle with scapula
 (3) Humerus with scapula
 (4) Clavicle with acromion

BLC037

Re-AIPMT 2015

3. Which of the following is not a function of the skeletal system?
 (1) Locomotion
 (2) Production of erythrocytes
 (3) Storage of minerals
 (4) Production of body heat

BLC038

4. Which of the following joints would allow no movement?
 (1) Ball and Socket joint
 (2) Fibrous joint
 (3) Cartilaginous joint
 (4) Synovial joint

BLC039

NEET-II 2016

5. Osteoporosis, an age-related disease of skeletal system, may occur due to :-
 (1) Decreased level of estrogen
 (2) Accumulation of uric acid leading to inflammation of joints.

- (3) Immune disorder affecting neuro-muscular junction leading to fatigue.
 (4) High concentration of Ca^{++} and Na^+ .

BLC040

NEET-UG 2017

6. Out of 'X' pairs of ribs in humans only 'Y' pairs are true ribs. Select the option that correctly represents values of X and Y and provides their explanation :-
 (1) X = 12, Y = 5 True ribs are attached dorsally to vertebral column and sternum on the two ends.
 (2) X = 24, Y = 7 True ribs are dorsally attached to vertebral column but are free on ventral side.
 (3) X = 24, Y = 12 True ribs are dorsally attached to vertebral column but are free on ventral side.
 (4) X = 12, Y = 7 True ribs are attached dorsally to vertebral column and ventrally to the sternum.

BLC041

7. The pivot joint between atlas and axis is a type of :-
 (1) Cartilaginous joint (2) Synovial joint
 (3) Saddle joint (4) Fibrous joint

BLC042

NEET-UG 2019

8. Select the correct option .
 (1) 8th, 9th and 10th pairs of ribs articulate directly with the sternum.
 (2) 11th and 12th pairs of ribs are connected to the sternum with the help of hyaline cartilage.
 (3) Each rib is a flat thin bone and all the ribs are connected dorsally to the thoracic vertebrae and ventrally to the sternum.
 (4) There are seven pairs of vertebrosteral, three pairs of vertebrochondral and two pairs of vertebral ribs.

BLC043

NEET-UG 2019 (Odisha)

9. Match the following joints with the bones involved:-

Column - I	Column - II
(a) Gliding joint	(i) Between carpal and metacarpal of thumb
(b) Hinge joint	(ii) Between Atlas and Axis
(c) Pivot joint	(iii) Between the carpals
(d) Saddle joint	(iv) Between Humerus and Ulna.

Select the correct option from the following

- (1) (a)-(iii), (b)-(iv), (c)-(ii), d-(i)
 (2) (a)-(iv), (b)-(i), (c)-(ii), d-(iii)
 (3) (a)-(iv), (b)-(ii), (c)-(iii), d-(i)
 (4) (a)-(i), (b)-(iii), (c)-(ii), d-(iv)

BLC044

NEET-UG 2020

10. Match the following columns and select the correct option

Column - I	Column - II
(a) Gout	(i) Decreased levels of estrogen.
(b) Osteoporosis	(ii) Low Ca^{++} ions in the blood.
(c) Tetany	(iii) Accumulation of uric acid crystals.
(d) Muscular dystrophy disorder.	(iv) Auto immune dystrophy
	(v) Genetic disorder

- (1) (a)-(ii), (b)-(i), (c)-(iii), (d)-(iv)
 (2) (a)-(iii), (b)-(i), (c)-(ii), (d)-(v)
 (3) (a)-(iv), (b)-(v), (c)-(i), (d)-(ii)
 (4) (a)-(i), (b)-(ii), (c)-(iii), (d)-(iv)

BLC045

11. Match the following columns and select the correct option

Column - I	Column - II
(a) Floating Ribs	(i) Located between second and seventh ribs
(b) Acromion	(ii) Head of the Humerus
(c) Scapula	(iii) Clavicle
(d) Glenoid cavity	(iv) Do not connect with the sternum

	(a)	(b)	(c)	(d)
(1)	(iv)	(iii)	(i)	(ii)
(2)	(ii)	(iv)	(i)	(iii)
(3)	(i)	(iii)	(ii)	(iv)
(4)	(iii)	(ii)	(iv)	(i)

BLC046

NEET-UG 2021

12. Match list - I with list - II

List I	List II
(a) Scapula	(i) Cartilaginous bone
(b) Cranium	(ii) Flat bone
(c) Sternum	(iii) Fibrous bone
(d) Vertebral column	(iv) Triangular flat bone

Choose the correct answer from the options given below :-

- (1) a-i, b-iii, c-ii, d-iv (2) a-ii, b-iii, c-iv, d-i
 (3) a-iv, b-ii, c-iii, d-i (4) a-iv, b-iii, c-ii, d-i

BLC047

NEET-UG 2022

13. Given below are two statements: one is labelled as : Assertion (A) and the other is labelled as Reason (R).

Assertion : Osteoporosis is characterised by decreased bone mass and increased chances of fractures.

Reason : Common cause of osteoporosis is increased levels of estrogen.

In the light of the above statements, choose the **most appropriate** answer from the options given below:

- (1) Both Assertion and Reason are correct but Reason is not the correct explanation of Assertion.
 (2) Assertion is correct but Reason is not correct.
 (3) Assertion is not correct but Reason is correct.
 (4) Both Assertion and Reason are correct and Reason is the correct explanation of Assertion.

BLC048

NEET-UG 2023

14. Match List I with List II.

List I (Type of Joint)	List II (Found between)
A. Cartilaginous	I. Between flat skull bones Joint
B. Ball and Socket Joint	II. Between adjacent vertebrae in vertebral column
C. Fibrous Joint	III. Between carpal and metacarpal of thumb
D. Saddle Joint	IV. Between Humerus and Pectoral girdle

Choose the **correct** answer from the options given below :-

- (1) A-II, B-IV, C-I, D-III (2) A-I, B-IV, C-III, D-II
(3) A-II, B-IV, C-III, D-I (4) A-III, B-I, C-II, D-IV

BLC049

NEET-UG 2023 (Manipur)

15. Match List-I with List-II.

List-I	List-II
(A) Palm bones	(I) Phalanges
(B) Wrist bones	(II) Metacarpals
(C) Ankle bones	(III) Carpals
(D) Digit bones	(IV) Tarsals

Choose the **correct** answer from the options given below :-

- (1) (A)-(II), (B)-(III), (C)-(I), (D)-(IV)
(2) (A)-(IV), (B)-(I), (C)-(II), (D)-(III)
(3) (A)-(III), (B)-(IV), (C)-(I), (D)-(II)
(4) (A)-(II), (B)-(III), (C)-(IV), (D)-(I)

BLC050

NEET (UG) 2024

16. Match List-I with List-II.

List I	List II
A. Fibrous joints	I. Adjacent vertebrae,

			limited movement
B.	Cartilaginous joints	II.	Humerus and Pectoral girdle, rotational
C.	Hinge joints	III.	Skull, don't allow any movement
D.	Ball and socket joints	IV.	Knee, help in locomotion

Choose the correct answer from the options given below :-

- (1) A-IV, B-II, C-III, D-I
(2) A-I, B-III, C-II, D-IV
(3) A-II, B-III, C-I, D-IV
(4) A-III, B-I, C-IV, D-II

BLC051

RE-NEET (UG) 2024

17. Match List-I with List-II.

List-I Location of Joint	List-II Type of Joint
A. Joint between humerus and pectoral girdle	I. Gliding joint
B. Knee joint	II. Ball and Socket joint
C. Joint between atlas and axis	III. Hinge Joint
D. Joint between carpals	IV. Pivot joint

Choose the **correct** answer from the options given below :-

- (1) A-II, B-III, C-IV, D-I (2) A-III, B-II, C-I, D-IV
(3) A-I, B-IV, C-III, D-II (4) A-II, B-I, C-III, D-IV

BLC052

Exercise - II (Previous Year Questions)

ANSWER KEY

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Answer	4	3	4	2	1	4	2	4	1	2	1	4	2	1	4
Question	16	17													
Answer	4	1													

Exercise - III

Master Your Understanding

(A) NCERT BASED QUESTIONS

1. Match the columns and pick out the correct answer :-

Column-A	Column-B
(i) Atlas/axis	(a) Saddle joint
(ii) Carpal/metacarpal of thumb	(b) Hinge joint
(iii) Between phalanges	(c) Fibrous joint
(iv) Femur / acetabulum	(d) Ball and socket joint
(v) Between cranial bones	(e) Pivot joint

(i)	(ii)	(iii)	(iv)	(v)
(1) e	a	b	c	d
(2) e	a	b	d	c
(3) e	a	d	b	c
(4) e	a	d	c	b

BLC053

2. Joint between pubic bones in the pelvic girdle is-

- (1) Cartilaginous joint
- (2) Fibrous joint
- (3) Hinge joint
- (4) Ball and socket joint

BLC054

3. 11th and 12th pairs of ribs are called

- (1) True ribs
- (2) False ribs
- (3) Vertebrochondral ribs
- (4) Floating ribs

BLC055

4. The number of phalanges in both fore limbs of human is :-

- | | |
|--------|--------|
| (1) 14 | (2) 28 |
| (3) 12 | (4) 24 |

BLC056

5. Identify the correct and wrong statements:-
- (a) Human skeleton has 206 bones
 - (b) There are 12 pairs of ribs in human
 - (c) Sternum is present on the dorsal side of the body.
 - (d) All mammals (except of few) have 8 cervical vertebrae.
 - (e) Ribs are bicephalic

correct	wrong
(1) a, b, c	d, e
(2) a, b, d	c, e
(3) a, b, e	c, d
(4) a, c, d	b, e

BLC057

6. Which of the following is **wrong** match for each limb?

- (1) Wrist bones → 8 in number
- (2) Palm bones → 5 in number
- (3) Ankle bones → 7 in number
- (4) Digits → 12 in number

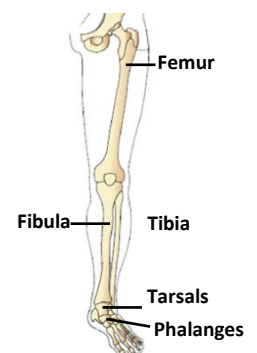
BLC058

7. Each coxal bone is formed by fusion of three bones?

- (1) Ilium, ischium, pubis
- (2) Ilium, sacrum, pubis
- (3) Ilium, sacrum, coccyx
- (4) Ilium sacrum, ischium

BLC059

8. Given below is a diagram of the bones of the left human hind limb as seen from front. It has certain mistakes in labelling.



Two of the wrongly labelled bones are :-

- (1) Tibia and tarsals
- (2) Femur and fibula
- (3) Fibula and phalanges
- (4) Tarsals and femur

BLC060

9. This bone is a large triangular flat bone situated in the dorsal part of the thorax between the second and the seventh ribs. Identify this bone :-

- (1) Femur
- (2) Hip bone
- (3) Scapula
- (4) Sacrum

BLC061

10. _____ are characterised by the presence of a fluid filled synovial cavity between the articulating surfaces of the two bones :-

- (1) Fibrous joints
- (2) Synovial joints
- (3) Cartilagenous joints
- (4) Hinge joints

BLC062

11. Inflammation of joints due to accumulation of uric acid crystals is called :-

- (1) Osteoporosis
- (2) Gout
- (3) Arthritis
- (4) Tetany

BLC063

12. _____ and _____ constitute our skeletal system.

- (1) Bones and blood
- (2) Blood and lymph
- (3) Bones and cartilages
- (4) Bones and nervous

BLC064

13. Which of the following type of joint allows considerable movements and therefore, play a significant role in locomotion?

- (1) Synovial joints
- (2) Fibrous joints
- (3) Cartilagenous joints
- (4) All of the above

BLC065

14. Match the columns

Column-A		Column-B	
(a) Ribs		(i) 26	
(b) Vertebrae		(ii) 14	
(c) Phalanges		(iii) 1	
(d) Sternum		(iv) 24	
(a)	(b)	(c)	(d)
(1) (iv)	(i)	(iii)	(ii)
(2) (iv)	(iii)	(ii)	(i)
(3) (iv)	(i)	(ii)	(iii)
(4) (iv)	(iii)	(i)	(ii)

BLC066

15. Match the List-1 with List-2 correct and find your answer from the code given below :-

List-1		List-2	
(i) Palm bones		(A) 14 in number	
(ii) Wrist bones		(B) 5 in number	
(iii) Ankle bones		(C) 8 in number	
(iv) Phalanges		(D) 7 in number	

Code :

(1) (i)-A	(ii)-B	(iii)-C	(iv)-D
(2) (i)-B	(ii)-C	(iii)-D	(iv)-A
(3) (i)-A	(ii)-C	(iii)-D	(iv)-B
(4) (i)-C	(ii)-D	(iii)-B	(iv)-A

BLC067

16. Between humerus and pectoral girdle which type of joint is present :-

- (1) Pivot joint
- (2) Hinge joint
- (3) Ball & socket joints
- (4) Gliding joints

BLC068

17. Find out incorrect statements :-
 (1) Brain box is formed of 8 bones
 (2) In skull the frontal bone is single
 (3) A single U-shaped bone present at the base of the buccal cavity is quadrate
 (4) Hyoid bone is the part of skull

BLC069

(B) ANALYTICAL QUESTIONS

18. Pelvic girdle of man consists of :-
 (1) Ilium, ischium and pubis
 (2) Ilium, ischium and coracoid
 (3) Coracoid, scapula and clavicle
 (4) Ilium, coracoid and scapula
19. Hinge joint is present between :-
 (1) Femur and ulna
 (2) Humerus and ulna
 (3) Femur and pectoral girdle
 (4) Femur and pelvic girdle
20. Thoracic cage in Human is made up of :-
 (1) Ribs, vertebral column and diaphragm
 (2) Ribs, diaphragm
 (3) Vertebral column, diaphragm and sternum
 (4) Ribs, vertebral column and sternum
21. In which one of the following bones acromian process is found ?
 (1) Femur (2) Coxal bones
 (3) Atlas (4) Scapula
22. The number of floating ribs in human body
 (1) 6 pairs (2) 5 pairs
 (3) 3 pairs (4) 2 pairs

BLC070

BLC071

BLC072

BLC073

BLC074

23. Axial skeletal is made up of
 (1) Vertebral column complete
 (2) Skull
 (3) Sternum
 (4) All of the above

BLC075

24. The shoulder and hip joints are
 (1) Pivot joint
 (2) Hinge joint
 (3) Ellipsoid joint
 (4) Ball and socket joint

BLC076

25. Bones become fragile in -
 (1) Gout (2) Osteoporosis
 (3) Arthritis (4) None of these

BLC077

26. Part of mammalian body has single pairs of bones -
 (1) Pelvic girdle
 (2) External ear
 (3) Lower jaw
 (4) All of the above

BLC078

27. Which one of the following items gives its *correct total* number?
 (1) Types of diabetes – 3
 (2) Cervical vertebrae in humans – 8
 (3) Floating ribs in humans – 4
 (4) Amino acids found in proteins – 16

BLC079

28. Elbow joint is an example of :-
 (1) Ball and socket joint
 (2) Pivot joint
 (3) Hinge joint
 (4) Gliding joint

BLC080

29. Three of the following pairs of human skeletal parts are correctly matched with their respective inclusive skeletal category and one pair is not matched. Identify the nonmatching pair :-

Pair of skeletal parts	Category
(1) Malleus and stapes	Ear ossicles
(2) Sternum and ribs	Axial skeleton
(3) Clavicle and glenoid cavity	Pelvic girdle
(4) Humerus and ulna	Appendicular Skeleton

BLC081

30. Select the correct statement regarding the specific disorder of muscular or skeletal system-

- (1) Myasthenia gravis – Auto immune disorder which inhibits sliding of myosin filaments.
- (2) Gout – inflammation of joints due to extra deposition of calcium.

- (3) Muscular dystrophy – age related shortening of muscles.
- (4) Osteoporosis-decrease in bone mass and higher chances of fractures with advancing age.

BLC082

31. Select the correct statement with respect to locomotion in humans :-

- (1) The joint between adjacent vertebrae is a fibrous joint.
- (2) A decreased level of progesterone causes osteoporosis in old people.
- (3) Accumulation of uric acid crystals in joints causes their inflammation.
- (4) The vertebral column has 10 thoracic vertebrae.

BLC083

Exercise - III

ANSWER KEY

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Answer	2	1	4	2	3	4	1	3	3	2	2	3	1	3	2
Question	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Answer	3	3	1	2	4	4	4	4	4	2	1	3	3	3	4
Question	31														
Answer	3														

Exercise - I (Conceptual Questions)

Build Up Your Understanding

INTRODUCTION, STRUCTURE OF MUSCLE

1. Epimysium of muscles are made up of :-
 (1) White fibrous connective tissue
 (2) Adipose connective tissue
 (3) Reticular connective tissue
 (4) Areolar connective tissue

BLC135

2. Muscles of Iris & Ciliary body originate :-
 (1) Ectoderm
 (2) Mesoderm
 (3) Endoderm
 (4) All of above

BLC136

3. Striated muscle fibres found in :-
 (1) Trachea (2) Lung
 (3) Leg (4) Gall bladder

BLC137

4. The type of muscles present in our :
 (1) Upper arm are smooth muscle fibres fusiform in shape.
 (2) Heart are involuntary and unstriated smooth muscles.
 (3) Intestine are striated and involuntary.
 (4) Thigh are striated and voluntary.

BLC138

5. Which one of the following is *correct* pairing of a body part and the kind of muscle tissue that moves it ?
 (1) Iris – Involuntary smooth muscle
 (2) Heart wall–Involuntary unstriated muscle
 (3) Biceps of upper arm–Smooth muscle fibres
 (4) Abdominal wall–Skeletal muscle

BLC139

6. One myosin filament in the myofibril of skeletal muscle fibre is surrounded by how many actin filaments ?
 (1) Two (2) Four (3) Six (4) Three

BLC140

7. Which character is not associated with red muscle fibres?
 (1) High quantity of myoglobin is present
 (2) Amount of mitochondria are more
 (3) Amount of sarcoplasmic reticulum is high
 (4) Contraction is slow and for long duration

BLC141

8. Ciliary movement occurs in most of our internal tubular organs which are lined by ___A___ epithelium. The coordinated movement of cilia in the ___B___ help us in removing dust particles.
 Identify A and B complete the given statement.

- (1) A–squamous, B–trachea
 (2) A–cuboidal, B–trachea
 (3) A–ciliated, B–trachea
 (4) A–stratified, B–trachea

BLC142

9. Skeletal muscles are closely associated with the ...A... components of the body. They have ...B... appearance under the microscope and hence are called ...C... muscles.

Choose the correct options to fill A, B and C, so as to complete the given statement.

- (1) A–muscular, B–stripped, C–striated
 (2) A–visceral, B–stripped, C–striated
 (3) A–skeletal, B–stripped, C–striated
 (4) A–microfibrillar, B–stripped, C–striated

BLC143

MUSCLE PROTEIN, MUSCLE CONTRACTION

- 10.** During contraction of muscles :-
 (1) Actin Filament slide over actin
 (2) Myosin filament slide over myosin
 (3) Actin filament slide over myosin
 (4) Myosin filament slide over actin
BLC144
- 11.** Contractile unit of muscle fibres :-
 (1) Muscle fibre (2) Sarcomere
 (3) Myofibril (4) Sacosome
BLC145
- 12.** ATP-ase activity found in :-
 (1) Myosin filament
 (2) Actin filament
 (3) Both
 (4) Troponin
BLC146
- 13.** Chemical Ions responsible for muscles contraction :-
 (1) Ca^{++} & K^{+} (2) Na^{+} & K^{+}
 (3) Na^{+} & Ca^{++} (4) Ca^{++} & Mg^{++} Ions
BLC147
- 14.** Immediate source of energy for muscle contraction is:-
 (1) Glucose
 (2) GTP
 (3) ATP
 (4) Creatine phosphate
BLC148
- 15.** The muscle fatigue occurs due to accumulation of:-
 (1) CO_2
 (2) Lactic acid
 (3) Creatine phosphate
 (4) Myosin ATPase
BLC149

- 16.** ___A___ band contains actin and is called ___B___ band, whereas the ___C___ band called ___D___ band contains myosin.
 Choose the correct options for A, B, C and D to complete the given statement :-
 (1) A–Light, B–I, C–dark, D–A
 (2) A–Dark, B–I, C–light, D–A
 (3) A–Dark, B–A, C–light, D–I
 (4) A–Light, B–A, C–dark, D–I
BLC150
- 17.** In a ...A... state, the edge of thin filaments on either side of thick filaments ...B... overlap the free ends of ...C... filaments leaving the central part of thick filaments. This central part of thick filament, not overlapped by thin filaments is called ...D... zone.
 Choose the correct options to fill the gaps A, B, C and D, so as to complete the given statement
 (1) A–resting, B–partially, C–thick, D–H
 (2) A–resting, B–partially, C–thick, D–A
 (3) A–resting, B–partially, C–thick, D–I
 (4) A–resting, B–partially, C–thick, D–M
BLC151

INVOLUTARY, CARDIAC MUSCLES, DISORDERS

- 18.** Functionally, cardiac muscles are similar to-
 (1) Unstriated muscles
 (2) Striated muscles
 (3) Striated & Unstriated muscles
 (4) None
BLC152
- 19.** Mitochondria in cardiac muscles :-
 (1) More than other muscles fibres
 (2) Less than other muscles fibres
 (3) Equal than other muscles fibres
 (4) None
BLC153

20. Unstriated muscle are also known as :-

- (1) Visceral
- (2) Smooth
- (3) Involuntary
- (4) All

BLC154

21. Cardiac muscles Fibres :-

- (1) Involuntary
- (2) Non-fatigue
- (3) Striated like
- (4) All

BLC155

22. Smooth muscles fibres are :-

- (1) Spindle shaped
- (2) Unbranched & Involuntary
- (3) Uninucleated
- (4) All of above

BLC156

23. Which filamentous proteins are found in muscle?

- (1) Leucine & myosin protein
- (2) Actin & myosin protein
- (3) Actin & leucine protein
- (4) Actin protein only

BLC157

24. I. Sarcoplasmic reticulum are abundant.
II. Myoglobin content is high.
III. Sarcoplasmic reticulum are moderate.
IV. Aerobic muscles.
V. Depends on anaerobic respiration for energy.
VI. Less myoglobin content.
Select the option with correct statements for red muscle.

- (1) I, II and IV
- (2) I, II and III
- (3) II, III and IV
- (4) II and IV

BLC158

Exercise-I (Conceptual Questions)

ANSWER KEY

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Answer	1	1	3	4	1	3	3	3	3	3	2	1	4	3	2
Question	16	17	18	19	20	21	22	23	24						
Answer	1	1	1	1	4	4	4	2	3						

Exercise - II (Previous Year Questions)

AIPMT/NEET

AIPMT 2014

1. Stimulation of a muscle fiber by a motor neuron occurs at :
- (1) the neuromuscular junction
 - (2) the transverse tubules
 - (3) the myofibril
 - (4) the sarcoplasmic reticulum

BLC159

AIPMT 2015

2. Sliding filament theory can be best explained as :-
- (1) Actin and Myosin filaments shorten and slide pass each other
 - (2) Actin and Myosin filaments do not shorten but rather slide pass each other
 - (3) When myofilaments slide pass each other, Myosin filaments shorten while Actin filaments do not shorten
 - (4) When myofilaments slide pass each other Actin filaments shorten while Myosin filament do not shorten

BLC160

NEET-I 2016

3. Lack of relaxation between successive stimuli in sustained muscle contraction is known as:-
- (1) Spasm
 - (2) Fatigue
 - (3) Tetany
 - (4) Tonus

BLC161

NEET-II 2016

4. Smooth muscles are :-
- (1) Involuntary, cylindrical, striated
 - (2) Voluntary, spindle-shaped, uninucleate
 - (3) Involuntary, fusiform, non-striated
 - (4) Voluntary, multinucleate, cylindrical

BLC162

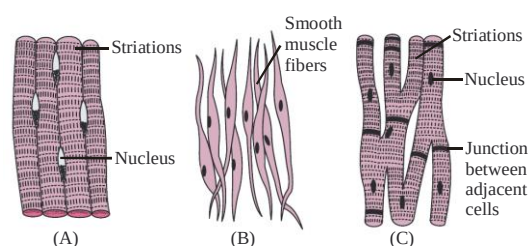
5. Name the ion responsible for unmasking of active sites for myosin for cross-bridge activity during muscle contraction.

- (1) Sodium
- (2) Potassium
- (3) Calcium
- (4) Magnesium

BLC163

NEET-UG 2017

6. Select the correct match :-



- (1) A-Skeletal muscles → biceps, striated muscles, involuntary
- (2) B-Smooth muscles → walls of stomach, voluntary
- (3) C-Cardiac muscles → heart, dorsal wall of aorta, voluntary
- (4) A-Skeletal muscle → biceps, striated, voluntary

BLC164

NEET-UG 2018

7. Calcium is important in skeletal muscle contraction because it :-
- (1) binds to troponin to remove the masking of active sites on actin for myosin.
 - (2) activates the myosin ATPase by binding to it.
 - (3) detaches the myosin head from the actin filament.
 - (4) prevents the formation of bonds between the myosin cross bridges and the actin filament.

BLC165

NEET-UG 2019 (Odisha)

8. Which of the following diseases is an autoimmune disorder?

(1) Myasthenia gravis
(2) Arthritis
(3) Osteoporosis
(4) Gout

BLC166

NEET-UG 2019

9. Which of the following muscular disorders is inherited?

(1) Tetany
(2) Muscular dystrophy
(3) Myasthenia gravis
(4) Botulism

BLC167

10. Chronic autoimmune disorder affecting neuro muscular junction leading to fatigue, weakening and paralysis of skeletal muscle is called as :-

(1) Arthritis
(2) Muscular dystrophy
(3) Myasthenia gravis
(4) Gout

BLC168

11. Match the following columns and select the correct option

Column - I	Column - II
(a) Gout	(i) Decreased levels of estrogen
(b) Osteoporosis	(ii) Low Ca^{++} ions in the blood
(c) Tetany	(iii) Accumulation of uric acid crystals
(d) Muscular dystrophy	(iv) Auto immune disorder
	(v) Genetic disorder

(1) (a)-(ii), (b)-(i), (c)-(iii), (d)-(iv)

(2) (a)-(iii), (b)-(i), (c)-(ii), (d)-(v)

(3) (a)-(iv), (b)-(v), (c)-(i), (d)-(ii)

(4) (a)-(i), (b)-(ii), (c)-(iii), (d)-(iv)

BLC169

NEET-UG 2021

12. Which of the following statements wrongly represents the nature of smooth muscle?

(1) These muscle have no striations
(2) They are involuntary muscles
(3) Communication among the cells is performed by intercalated discs
(4) These muscles are present in the wall of blood vessels

BLC170

13. During muscular contraction which of the following events occur ?

(a) 'H' zone disappears
(b) 'A' band widens
(c) 'I' band reduces in width
(d) Myosin hydrolyzes ATP, releasing the ADP and P_i
(e) Z-lines attached to actins are pulled inwards

Choose the **correct** answer from the options given below.

(1) (a), (c), (d), (e) only
(2) (a), (b), (c), (d) only
(3) (b), (c), (d), (e) only
(4) (b), (d), (e), (a) only

BLC171

NEET-UG 2022

14. Which of the following is a **correct** match for disease and its symptoms ?

- (1) Tetany - high Ca^{2+} level causing rapid spasms.
- (2) Myasthenia gravis - Genetic disorder resulting in weakening and paralysis of skeletal muscle
- (3) Muscular dystrophy - An auto immune disorder causing progressive degeneration of skeletal muscle
- (4) Arthritis - Inflamed joints

BLC172

Re-NEET-UG 2022

15. According to the sliding filament theory:

- (1) Actin and myosin filaments slide over each other to increase the length of the sarcomere.
- (2) Length of A-band does not change.
- (3) I-band increases in length
- (4) The actin filaments slide away from A-band resulting in shortening of sarcomere.

BLC173

NEET-UG 2023

16. Which of the following statements are correct regarding skeletal muscle ?

- (A) Muscle bundles are held together by collagenous connective tissue layer called fascicle.
- (B) Sarcoplasmic reticulum of muscle fibre is a store house of calcium ions.
- (C) Striated appearance of skeletal muscle fibre is due to distribution pattern of actin and myosin proteins.

(D) M line is considered as functional unit of contraction called sarcomere.

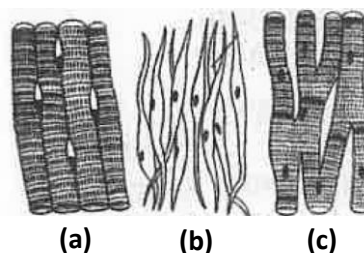
Choose the **most appropriate** answer from the options given below:

- (1) B and C only
- (2) A, C and D only
- (3) C and D only
- (4) A, B and C only

BLC174

NEET (UG) 2024

17. Three types of muscles are given as a, b and c. Identify the correct matching pair along with their location in human body :-



Name of muscle/location

- (1) (a) Smooth - Toes
(b) Skeletal - Legs
(c) Cardiac - Heart
- (2) (a) Skeletal - Triceps
(b) Smooth - Stomach
(c) Cardiac - Heart
- (3) (a) Skeletal - Biceps
(b) Involuntary - Intestine
(c) Smooth - Heart
- (4) (a) Involuntary - Nose tip
(b) Skeletal - Bone
(c) Cardiac - Heart

BLC175

18. Which of the following are Autoimmune disorders?

- (A) Myasthenia gravis.
- (B) Rheumatoid arthritis.
- (C) Gout
- (D) Muscular dystrophy.
- (E) Systemic Lupus Erythematosus (SLE).

Choose the most appropriate answer from the options given below :-

- (1) A, B & D only (2) A, B & E only
- (3) B, C & E only (4) C, D & E only

BLC176

RE-NEET (UG) 2024

19. Select the **correct** statements regarding mechanism of muscle contraction.

- (A) It is initiated by a signal sent by CNS via sensory neuron.
- (B) Neurotransmitter generates action potential in the sarcolemma.

(C) Increased Ca^{++} level leads to the binding of calcium with troponin on actin filaments.

(D) Masking of active site for actin is activated.

(E) Utilising the energy from ATP hydrolysis to form cross bridge.

Choose the **most appropriate** answer from the options given below:

- (1) B, C and E only
- (2) C, D and E only
- (3) A and D only
- (4) B, D and E only

BLC177

Exercise - II (Previous Year Questions)

ANSWER KEY

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Answer	1	2	3	3	3	4	1	1	2	3	2	3	1	4	2
Question	16	17	18	19											
Answer	1	2	2	1											

Exercise - III

Master Your Understanding

(A) NCERT BASED QUESTIONS

1. In a muscle fibre Ca^{++} is stored in :-
 (1) Sarcoplasmic reticulum
 (2) Sarcosome
 (3) Sarcomere
 (4) Sarcolemma
 BLC178
2. Cardiac muscles are :-
 (1) Striated, voluntary
 (2) Striated, involuntary
 (3) Unstriated, voluntary
 (4) Unstriated, involuntary
 BLC179
3. Ciliary movement is found in:
 (1) Macrophages and leucocytes
 (2) Fallopian tube and vasa deferentia
 (3) Fallopian tube and Trachea
 (4) Tongue and Limbs
 BLC180
4. Amoeboid movement is found in :-
 (1) Limbs, Jaw
 (2) Macrophages, Leucocytes
 (3) Trachea, Fallopian tube
 (4) Tongue, Leucocytes
 BLC181
5. In the center of I-Band, is an elastic fiber, which bisect it
 (1) 'H'-zone (2) 'M'-line
 (3) 'Z' line (4) A-band
 BLC182
6. Motor neuron along with muscle fibers are connected & constitute a :-
 (1) Neuro muscular junction
 (2) Motor end plate
 (3) Motor unit
 (4) Both (1) & (2)
 BLC183
7. Myosin head contains :-
 (1) ATPase
 (2) ATP binding sites
 (3) Active sites for actin
 (4) All of these
 BLC184

8. Which points are correct for cardiac muscles?
 (A) They are striated
 (B) They are unbranched
 (C) They are involuntary
 (D) Intercalated disc are present
 (1) A, B, C (2) B, C, D
 (3) A, C, D (4) A, B, D
 BLC185
9. In *Paramoecium*, the movement of food through cytopharynx take place by :-
 (1) Cilia (2) Flagella
 (3) Microvilli (4) Myonemes
 BLC186
10. The striated appearance of the myofibril is due to the distribution pattern of :-
 (1) Actin (2) Myosin
 (3) Calmodulin (4) Both (1) and (2)
 BLC187
11. Repeated activation of the muscles can lead to the accumulation of :-
 (1) Acetic acid (2) Acetyl choline
 (3) Lactic acid (4) Lactose
 BLC188
12. Muscles contains a red coloured oxygen storing pigment called :-
 (1) Haemoglobin (2) Sarcosome
 (3) Myoglobin (4) Hemerythrins
 BLC189

(B) ANALYTICAL QUESTIONS

13. In a resting state, the central part of thick filament which is not overlapped by thin filament is called :-
 (1) A-band (2) M-line
 (3) H-zone (4) I-band
 BLC190
14. During contraction of muscle :
 (1) Thin filaments slides over the thick filaments.
 (2) Thick filament slides over the thin filaments
 (3) Both filaments slide over each other.
 (4) No filament slides during contraction.
 BLC191

15. Which points are correct with the regarding of skeletal muscles?
 (A) Their activities are under the voluntary control of the nervous system.
 (B) They are located in the inner walls of visceral organs.
 (C) They are primarily involved in locomotary actions and changes of body postures.
 (D) They have no striped appearance
 (1) B, D (2) B, C (3) A, D (4) A, C

BLC192

16. Which points are correct about visceral muscles?
 (1) These are located in the inner walls of hollow visceral organs of the body.
 (2) They do not exhibit any striations.
 (3) Their activities are not under the voluntary control of the nervous system.
 (4) All of the above

BLC193

17. Correctly match column-I with column-II.

Column-I	Column-II
(A) Tetany	(i) Auto immune disorder.
(B) Osteoporosis	(ii) Progressive degeneration of skeletal muscle.
(C) Muscular dystrophy	(iii) Inflammation of joints.
(D) Arthritis	(iv) Rapid spasms in muscle.
(E) Myasthenia Gravis	(v) Bone mass decreased.

- (1) A→(i), B→(ii), C→(iii), D→(iv), E→(v)
 (2) A→(iv), B→(v), C→(i), D→(iii), E→(ii)
 (3) A→(iv), B→(v), C→(ii), D→(iii), E→(i)
 (4) A→(ii), B→(iii), C→(i), D→(v), E→(iv)

BLC194

18. The functional unit of contraction is :-
 (1) Muscle fibre (2) Sarcomere
 (3) Sarosomes (4) Sarcoplasm

BLC195

19. The correct sequence of events during relaxation of muscle is :-
 (i) Inactivation of the actin
 (ii) Ca^{++} returned to SR
 (iii) Cross bridges are broken
 (1) (i), (ii), (iii) (2) (ii), (i), (iii)
 (3) (ii), (iii), (i) (4) (iii), (ii), (i)

BLC196

20. Striated muscles are primarily involved in
 (A) Locomotary actions
 (B) Changes in body postures
 (C) Transportation of food through digestive tract
 (D) Transportation of gametes through genital tract
 (1) A, B (2) B, C (3) C, D (4) A, D

BLC197

21. Which character is/are associated with locomotion?
 (A) All locomotion are movements
 (B) All movements are not locomotions
 (C) Methods of locomotion vary with animals habitats
 (D) Locomotion is also for escape from predators
 (1) A and B (2) B, C and D
 (3) A, B and C (4) A, B, C and D

BLC198

22. The thick filaments in 'A' band are held together in the middle of this band by a thin membrane called
 (1) Z-line (2) M-line
 (3) H-line (4) O-line

BLC199

23. A neural signal reaching neuromuscular junction releases a neurotransmitter namely
 (1) Dopamine (2) Acetylcholine
 (3) GABA (4) Glycine

BLC200

24. **Statement I** : All locomotion are movement but all movements are not locomotion.
Statement II : Walking, running, climbing and swimming such types of voluntary movements are called locomotion.
 In the light of above statements, choose the correct answer from the option given below.
 (1) Both statement-I and II are incorrect.
 (2) Statement-I is correct but statement-II is incorrect.
 (3) Statement-I is incorrect but statement-II is correct.
 (4) Both statement-I and II are correct.

BLC201

25. Statement I : Each myofibril has alternate dark and light band on it.

Statement II : Myosin filaments are thinner as compared to the actin filaments.

In the light of the above statements, choose the correct answer from the option given below.

- (1) Both statement-I and II are incorrect.
- (2) Statement-I is correct but statement-II is incorrect.
- (3) Statement-I is incorrect but statement-II is correct.
- (4) Both statement-I and II are correct.

BLC202

26. Given below are two statements. One is labelled as Assertion (A) and the other is labelled as Reason (R).

Assertion (A) : Increase Ca^{+2} level leads to the binding of calcium with a subunit of troponin on actin filaments.

Reason (R) : Action potential spreads through the muscle fibre and causes the release of calcium ion into the sarcoplasm. In the light of the above statements, choose the correct answer from the option given below.

- (1) Both (A) and (R) are correct but (R) is not the correct explanation of (A).
- (2) (A) is correct but (R) is not correct.
- (3) (A) is not correct but (R) is correct.
- (4) Both (A) and (R) are correct and (R) is the correct explanation of (A)

BLC203

27. The type of muscles present in our :

- (1) upper arm are smooth muscle fibres fusiform in shape.
- (2) heart are involuntary and unstriated smooth muscles.
- (3) intestine are striated and involuntary.
- (4) thigh are striated and voluntary.

BLC204

28. Which one of the following pairs of chemical substances, is correctly categorised ?

- (1) Troponin and myosin – Complex proteins in striated muscles
- (2) Secretin and rhodopsin – Polypeptide hormones
- (3) Calcitonin and thymosin – Thyroid hormones
- (4) Pepsin and prolactin – Two digestive enzymes secreted in stomach

BLC205

29. The H-zone in the skeletal muscle fibre is due to:

- (1) extension of myosin filaments in the central portion of the A-band
- (2) the absence of myofibrils in the central portion of A-band
- (3) the central gap between myosin filaments in the A-band
- (4) the central gap between actin filaments extending through myosin filaments in the A-band

BLC206

Exercise - III

ANSWER KEY

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Answer	1	2	3	2	3	3	4	3	1	4	3	3	3	1	4
Question	16	17	18	19	20	21	22	23	24	25	26	27	28	29	
Answer	4	3	2	2	1	4	2	2	4	2	4	4	1	4	